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Relevance scale ☐ ☐ ☐ ☐ ☐**1 [Session 8: systems support for multimedia: Cooperative run-time management of](#)** **[adaptive applications and distributed resources](#)**

Christian Poellabauer, Hasan Abbasi, Karsten Schwan

December 2002 **Proceedings of the tenth ACM international conference on Multimedia****Publisher:** ACM PressFull text available: [pdf\(434.38 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

This paper presents *Q-fabric*, which is a set of lightweight, kernel-level abstractions for cooperative, distributed resource management and system/application adaptation. The basis of *Q-fabric* is its kernel-level, anonymous, asynchronous event service. With this mechanism, (1) applications can monitor and manage the local and remote resources they are using, (2) system-level resource managers can customize their actions to meet the needs of individual applications, and (3) policies can be ...

Keywords: OS services, QoS management, adaptation, event service**2 [Mobile computing and applications \(MCA\): Extending invalid-access prevention policy](#)** **[protocols for mobile-client data caching](#)**

Shin Parker, Zhengxin Chen

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing****Publisher:** ACM PressFull text available: [pdf\(109.41 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

Due to the proliferation of multimedia objects and the subsequent need for managing a large number of multimedia objects within mobile client/server computing environments, there may exist multiple physical copies of the same data object in client caches at the same time with the server as the primary owner of all data objects. This brings new challenges of dealing with caching multimedia data for mobile clients. Invalid-access prevention policy protocols developed in traditional DBMS environmen ...

Keywords: invalid-access prevention policy protocol, mobile client, multimedia object, serializability, two phase locking**3 [Scalable strong consistency for web applications](#)**

Swaminathan Sivasubramanian, Guillaume Pierre, Maarten van Steen

10/797, 772



September 2004 **Proceedings of the 11th workshop on ACM SIGOPS European workshop: beyond the PC EW11**

Publisher: ACM Press

Full text available: [pdf\(184.26 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

Web application workloads are often characterized by a large number of unique read requests and a significant fraction of write requests. Hosting these applications drives the need for the next generation CDN architecture that does more than caching the results of Web applications but replicates both the application code and its underlying data. We propose the design of a system that guarantees *strong consistency* for Web applications with high *scalability*. The proposed system is ba ...

4 Middleware for replication and transactions: Ganymed: scalable replication for transactional web applications

Christian Plattner, Gustavo Alonso

October 2004 **Proceedings of the 5th ACM/IFIP/USENIX international conference on Middleware Middleware '04**

Publisher: Springer-Verlag New York, Inc.

Full text available: [pdf\(295.27 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

Data grids, large scale web applications generating dynamic content and database service providing pose significant scalability challenges to database engines. Replication is the most common solution but it involves difficult trade-offs. The most difficult one is the choice between scalability and consistency. Commercial systems give up consistency. Research solutions typically either offer a compromise (limited scalability in exchange for consistency) or impose limitations on the data schema an ...

5 Using metalevel techniques in a flexible toolkit for CSCW applications



Paul Dourish

June 1998 **ACM Transactions on Computer-Human Interaction (TOCHI)**, Volume 5 Issue 2

Publisher: ACM Press

Full text available: [pdf\(292.97 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Ideally, software toolkits for collaborative applications should provide generic, reusable components, applicable in a wide range of circumstances, which software developers can assemble to produce new applications. However, the nature of CSCW applications and the mechanics of group interaction present a problem. Group interactions are significantly constrained by the structure of the underlying infrastructure, below the level at which toolkits typically offer control. This article describe ...

Keywords: consistency control, consistency guarantees, data distribution, divergency, metalevel programming, open implementation, software architecture

6 Virtual reality, digital media, and computer games: The structuring of a wireless internet application for a music-on-demand service on UMST devices



Marco Rocchetti, Vittorio Ghini, Paola Salomoni, Alessandro Gambetti, Davide Melandri, Mirko Piaggese, Daniela Salsi

March 2002 **Proceedings of the 2002 ACM symposium on Applied computing**

Publisher: ACM Press

Full text available: [pdf\(858.84 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Developing enhanced wireless Internet applications is becoming one of the upcoming challenges for mobile radio networks operators. In this paper we introduce and discuss the general software architecture of a wireless Internet-based application we have

designed and implemented to support the distribution of Mp3-based musical songs to UMTS devices. We have examined the effects that Internet traffic has on the performance of wireless UMTS networks, due to the distribution of Mp3 files by means of ...

Keywords: UMTS, digital media on UMTS devices, music on demand, performance evaluation, wireless multimedia applications


7 Tools for building asynchronous servers to support speech and audio applications



Barry Arons

December 1992 **Proceedings of the 5th annual ACM symposium on User interface software and technology**

Publisher: ACM Press

Full text available:  pdf(946.22 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Distributed client/server models are becoming increasingly prevalent in multimedia systems and advanced user interface design. A multimedia application, for example, may play and record audio, use speech recognition input, and use a window system for graphical I/O. The software architecture of such a system can be simplified if the application communicates to multiple servers (e.g., audio servers, recognition servers) that each manage different types of input and output. This paper describe ...

Keywords: asynchronous message passing, audio servers, distributed client-server architecture, remote procedure call, speech and studio applications, speech recognition and synthesis

8 FORMI: an RMI extension for adaptive applications



Rüdiger Kapitza, Michael Kirstein, Holger Schmidt, Franz J. Hauck

November 2005 **Proceedings of the 4th workshop on Reflective and adaptive middleware systems ARM '05**

Publisher: ACM Press

Full text available:  pdf(448.00 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

RMI is a well-known middleware that smoothly integrates into Java. RMI uses classical RPC-based client-server interaction, precisely remote method calls. Although RMI has several extension points (i.e., for replacing transport protocols and call semantics), this is not enough for many applications as it can not cope with non-RPC-based communication, fault tolerance, scalability, and quality-of-service in general. We present FORMI, an RMI extension for supporting the very flexible fragmented-obje ...

Keywords: Java RMI, adaptability, fragmented objects

9 Model-driven development of Web applications: the AutoWeb system



Piero Fraternali, Paolo Paolini

October 2000 **ACM Transactions on Information Systems (TOIS)**, Volume 18 Issue 4

Publisher: ACM Press

Full text available:  pdf(6.94 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes a methodology for the development of WWW applications and a tool environment specifically tailored for the methodology. The methodology and the development environment are based upon models and techniques already used in the hypermedia, information systems, and software engineering fields, adapted and blended in an original mix. The foundation of the proposal is the conceptual design of WWW

applications, using HDM-lite, a notation for the specification of structure, nav ...

Keywords: HTML, WWW, application, development, intranet, modeling


10 UIO: a uniform I/O system interface for distributed systems



David R. Cheriton

January 1987 **ACM Transactions on Computer Systems (TOCS)**, Volume 5 Issue 1

Publisher: ACM Press

Full text available:  [pdf\(3.20 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

A uniform I/O interface allows programs to be written relatively independently of specific I/O services and yet work with a wide variety of the I/O services available in a distributed environment. Ideally, the interface provides this uniform access without excessive complexity in the interface or loss of performance. However, a uniform interface does not arise from careful design of individual system interfaces alone; it requires explicit definition. In this paper, the UIO (unifo ...

11 Flexible collaboration transparency: supporting worker independence in replicated application-sharing systems



James Begole, Mary Beth Rosson, Clifford A. Shaffer

June 1999 **ACM Transactions on Computer-Human Interaction (TOCHI)**, Volume 6 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(312.22 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This article presents a critique of conventional collaboration transparency systems, also called "application-sharing" systems, which provide the real-time shared use of legacy single-user applications. We find that conventional collaboration transparency systems are inefficient in their use of network resources and lack support for key groupware principles: concurrent work, relaxed WYSIWIS, and group awareness. Next, we present an alternative approach to implementing collaborat ...

Keywords: Flexible JAMM, Java, application sharing, collaboration transparency, computer-supported cooperative work, groupware, usability


12 Network applications in Ada 95



Jörg Kienzle

November 1997 **Proceedings of the conference on TRI-Ada '97**

Publisher: ACM Press

Full text available:  [pdf\(1.02 MB\)](#)

Additional Information: [full citation](#), [references](#), [index terms](#)

Keywords: Ada 95, GLADE, GNAT, client-server architectures, distributed systems, replication


13 Distributed systems - programming and management: On remote procedure call



Patrícia Gomes Soares

November 1992 **Proceedings of the 1992 conference of the Centre for Advanced Studies on Collaborative research - Volume 2**

Publisher: IBM Press

Full text available:  [pdf\(4.52 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

The Remote Procedure Call (RPC) paradigm is reviewed. The concept is described, along with the backbone structure of the mechanisms that support it. An overview of works in supporting these mechanisms is discussed. Extensions to the paradigm that have been proposed to enlarge its suitability, are studied. The main contributions of this paper are a standard view and classification of RPC mechanisms according to different perspectives, and a snapshot of the paradigm in use today and of goals for t ...

14 Recovery guarantees for Internet applications



Roger Barga, David Lomet, German Shegalov, Gerhard Weikum

August 2004 **ACM Transactions on Internet Technology (TOIT)**, Volume 4 Issue 3

Publisher: ACM Press

Full text available:  [pdf\(997.52 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Internet-based e-services require application developers to deal explicitly with failures of the underlying software components, for example web servers, servlets, browser sessions, and so forth. This complicates application programming, and may expose failures to end users. This paper presents a framework for an application-independent infrastructure that provides recovery guarantees and masks almost all system failures, thus relieving the application programmer from having to deal with these f ...

Keywords: Exactly-once execution, application recovery, communication protocols, interaction contracts


15 Building distributed, multi-user applications by direct manipulation



Krishna Bharat, Marc H. Brown

November 1994 **Proceedings of the 7th annual ACM symposium on User interface software and technology**

Publisher: ACM Press

Full text available:  [pdf\(1.27 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes Visual Obliq, a user interface development environment for constructing distributed, multi-user applications. Applications are created by designing the interface with a GUI-builder and embedding callback code in an interpreted language, in much the same way as one would build a traditional (non-distributed, single-user) application with a modern user interface development environment. The resulting application can be run from within the GUI-builder for rapid turnaround ...

Keywords: CSCW, GUI-builders, UIMS, application builders, distributed applications, groupware

16 Cluster resource management: Resource overbooking and application profiling in shared hosting platforms



Bhuvan Urgaonkar, Prashant Shenoy, Timothy Roscoe

December 2002 **ACM SIGOPS Operating Systems Review**, Volume 36 Issue SI

Publisher: ACM Press

Full text available:  [pdf\(2.00 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

In this paper, we present techniques for provisioning CPU and network resources in shared hosting platforms running potentially antagonistic third-party applications. The primary contribution of our work is to demonstrate the feasibility and benefits of overbooking resources in shared platforms, to maximize the platform yield: the revenue generated by the available resources. We do this by first deriving an accurate estimate of application resource needs by profiling applications on dedicated no ...

17 Enhancing knowledge processing in client/server environments

J. Thomas, B. Mitschang, N. Mattos, S. DeBloch

December 1993 **Proceedings of the second international conference on Information and knowledge management****Publisher:** ACM PressFull text available: [pdf\(1.45 MB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)**18** Designing a 'universal' web application server

Andrew Maunder, Reinhardt van Rooyen, Hussein Suleman

July 2005 **Proceedings of the 2005 annual research conference of the South African institute of computer scientists and information technologists on IT research in developing countries SAICSIT '05****Publisher:** South African Institute for Computer Scientists and Information TechnologistsFull text available: [pdf\(726.40 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Modern Web server systems typically consist of a single Web server instance capable of utilising various backend technologies. For security reasons this Web server instance is run as the unprivileged user, the user 'nobody'. This has the implication of having users make their Web components world-accessible so that such an unprivileged Web server instance may access them. World accessible files or directories are open to many threats including modification and removal by any system user, authori ...

Keywords: Web application servers, context switching, modularity, process persistence, scalability

19 Decentralized storage systems: Ivy: a read/write peer-to-peer file system

Athicha Muthitacharoen, Robert Morris, Thomer M. Gil, Benjie Chen

December 2002 **ACM SIGOPS Operating Systems Review**, Volume 36 Issue S1**Publisher:** ACM PressFull text available: [pdf\(1.65 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

Ivy is a multi-user read/write peer-to-peer file system. Ivy has no centralized or dedicated components, and it provides useful integrity properties without requiring users to fully trust either the underlying peer-to-peer storage system or the other users of the file system. An Ivy file system consists solely of a set of logs, one log per participant. Ivy stores its logs in the DHash distributed hash table. Each participant finds data by consulting all logs, but performs modifications by appendi ...

20 Adaptive performance prediction for distributed data-intensive applications

Marcio Faerman, Alan Su, Richard Wolski, Francine Berman

January 1999 **Proceedings of the 1999 ACM/IEEE conference on Supercomputing (CDROM)****Publisher:** ACM PressFull text available: [pdf\(292.25 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

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